

Appl. No.: 10/731,770
Amdt. dated 10/27/2005
Reply to Office action of 07/28/05

REMARKS/ARGUMENTS

In the Office Action dated July 28, 2005, Claims 1-26 are pending. The Examiner objects to the drawings and the specification because "E" is defined as a primary clearance angle in the specification, while Figure 3 purportedly depicts a primary relief angle. The Examiner rejects Claim 11 under 35 U.S.C. § 112, second paragraph, for lacking antecedent basis. The Examiner rejects Claims 1-5, 7, 13-17, 19, and 25 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,234,725 to Campian. In addition, the Examiner rejects Claims 6, 8, 9, 11, 12, 18, 20, 21, 23, 24, and 26 under 35 U.S.C. § 103(a) as being unpatentable over Campian in view of U.S. Patent No. 4,572,714 to Suzuki et al. Moreover, the Examiner rejects Claims 10 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Campian in view of U.S. Patent Application Publication No. 20050105973 to MacArthur.

Applicants have amended independent Claims 1, 13, and 25 to further patentably distinguish the cited references. Claims 11 and 23 have been amended to recite proper antecedent basis. Therefore, in light of the claim amendments and subsequent remarks, Applicants respectfully request reconsideration and allowance of the claims.

A. The Objections to the Drawings and the Specification are Overcome

The Examiner finds that the "non-cutting edge clearance" must be shown in the drawings or be canceled from the claims. However, the Applicants submit that the non-cutting edge clearance is appropriately designated as "E" in FIG. 3 of the present application. In contrast to the Examiner's statement in the Office Action, "E" corresponds to a primary clearance angle, as also specified in the specification of the present application on page 10, lines 4-6. Applicants also submit that it is well known to those of ordinary skill in the aerospace industry that "primary clearance angle" refers to "E" in FIG. 3 and has replaced the outdated term "primary relief angle" (see National Aerospace Standards). Even assuming that the Examiner's objection was accurate, an Applicant may be its own lexicographer per *MPEP* § 2111.02 and has illustrated and explicitly defined a primary clearance angle in the drawings and specification, which is at least

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one example of a non-cutting clearance, as recited in the claims. Therefore, Applicants submit that the objections to the drawings and the specification are overcome.

B. The Rejection of Claim 11 under 35 U.S.C. § 112 is Overcome

Dependent Claim 11 has been amended to address the rejection under 35 U.S.C. § 112, second paragraph. Namely, Claim 11 has been amended to recite first and second helixes rather than right and left helixes such that Claim 11 includes proper antecedent basis. In addition, dependent Claim 23 has been similarly amended to recite correct antecedent basis.

C. Independent Claims 1, 13 and 25

Independent Claims 1, 13, and 25 have been amended for clarification and to further distinguish each of the cited references, taken alone or in combination. For example, Claim 1 recites a routing tool for cutting material that comprises a substantially cylindrical shaft member having a shank portion and a cutting portion. The cutting portion includes a plurality of cutting teeth disposed peripherally about a first helix and an intersecting second helix, wherein each cutting tooth defines a first cutting clearance on a first cutting edge and a first non-cutting clearance on a first non-cutting edge. The cutting tooth further defines a second cutting clearance on a second cutting edge and a second non-cutting clearance on a second non-cutting edge. Claim 1 has been amended to recite that each cutting tooth includes a respective flat defined by each of the first cutting and non-cutting edges and the second cutting and non-cutting edges and that each flat extends along each cutting tooth resulting in a circular land on an outside diameter of the cutting portion. Independent Claims 13 and 25 include similar recitations in the context of an apparatus and a method, respectively.

D. The Campian Reference

Campian discloses a rotary cutting tool that includes intersecting cutters defined at the intersection of right-hand and left-hand helical flute grooves cut in a tool shank. The cutters form an "arrowhead" shaped cutting flute, where each flute includes a radial relief and a radial clearance angle. Primary clearance is provided by a radial relief angle on the land extending

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from the leading edge of each cutter, while secondary clearance is provided in a recessed area behind the lands.

E. The Rejection of Independent Claims 1, 13, and 25 under 35 U.S.C. § 102(b) is Overcome

Applicants submit that independent Claims 1, 13, and 25 are distinguishable from Campian. In particular, Campian does not teach or suggest that each cutting tooth includes a respective flat defined by each of the first cutting and non-cutting edges and the second cutting and non-cutting edges and that each flat extends along each cutting tooth resulting in a circular land on an outside diameter of the cutting portion. In this regard, Campian discloses that each cutter includes a land. FIG. 1A of Campian clearly illustrates that cutters (22, 24) include respective lands (28), where the cutters and lands are configured in a generally arrowhead shape. Furthermore, Campian discloses that in addition to the primary clearance and radial relief angle on each land, there is secondary clearance provided in a recessed area (30) behind the lands (28).

In contrast, the claims of the present application recite that each cutting tooth includes a respective flat (although the claims of the present application recite that each cutting tooth includes a "flat," while Campian discloses that each cutter includes a "land," the Figures disclosed in Campian demonstrate that the lands are similar to the flat defined on each cutting tooth). In particular, the land disclosed by Campian extends along the length of each cutter, which is clearly illustrated by the arrowhead configuration of the intersecting cutters. Conversely, the first and second cutting and non-cutting edges recited in the claims of the present application collectively define a single flat rather than a pair of flats.

Moreover, Campian discloses that the cutting tool is typically employed to cut plastic material such as Styrofoam plastic. Conversely, the routing tool of the present application employs a cutting tooth geometry that is capable of cutting much harder materials (e.g., composites) with an improved surface finish. The significant difference in the cutting tooth geometries between the present application and that disclosed by Campian demonstrates that Campian's cutting tool would be unable to achieve a desirable surface finish for harder materials.

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Thus, Applicants submit that the amended independent Claims 1, 13, and 25 are distinguishable from Campian.

Because Campian does not teach or suggest a cutting tooth having a respective flat defined by first and second cutting and non-cutting edges, Campian fails to teach or suggest independent Claims 1, 13, and 25 of the present application. Moreover, none of the remaining references, taken individually or in combination with Campian, teach or suggest the Claims 1, 13, and 25. Therefore, the rejection of independent Claims 1, 13, and 25 under 35 U.S.C. § 102(b) over the cited references is overcome. As such, it is submitted that dependent Claims 2-12, 14-24, and 26 are allowable for at least those reasons discussed above with respect to independent Claims 1, 13, and 25, respectively.

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CONCLUSION

In view of the amendments and remarks presented above, Applicants submit that the present application is in condition for allowance. As such, the issuance of a Notice of Allowance is therefore respectfully requested. In order to expedite the examination of the present application, the Examiner is encouraged to contact Applicants' undersigned attorney in order to resolve any remaining issues.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

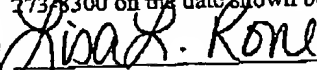


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10/27/05
Date